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EXAMINER

WOODS, ERIC V

ART UNIT PAPER NUMBER

2628

DATE MAILED: 06/27/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/669,580

Applicant(s)

SUDOH, TOMOHIRO

Examiner

Eric Woods

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 February 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 7-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 7-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Response to Arguments

Applicant's arguments, see Remarks pages 1-6 and claim amendments, filed 24 June 2006, with respect to the rejection(s) of claim(s) 7-12 under 35 USC 103(a) have been fully considered and are persuasive.

It is noted that applicant refers to claim 1 throughout the Remarks, where such claim has been canceled. Examiner believes that applicant may have meant 'claims 7 through 12' or 'claims 7 and 12' and such Remarks will be read in that light.

Therefore, the rejection of claims 7-12 under 35 USC 103(a) has been withdrawn in view of the amendments to the claims, since the amendments changed the scope of the claim.

The rejection of claims 7-12 under 35 USC 112, second paragraph, as lacking antecedent basis stand withdrawn since applicant has corrected this deficiency in their amendment.

Examiner thanks applicant for providing a clear meaning for the terms that examiner found to unclear, and for validating that the interpretation taken was in fact the correct one.

However, upon further consideration, a new ground(s) of rejection is made in view of various references as below.

Note also that applicant did not dispute examiner's taking of Official Notice in the last Office Action with respect to PSpice. Therefore, such assertions were accepted by

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applicant, and are therefore stipulated as facts-in-evidence for any further proceedings in this matter.

The modifications to the claims are two-fold – namely that it is now stipulated that any axis that is not logarithmic is linear and vice versa. The first assertion is inherent in how the PSpice reference operates, since it only has two types of axes – logarithmic and linear.

Note further that all instances of Official Notice have **not** been challenged and have therefore been accepted by applicant as stipulated and containing / proving the facts attested to therein.

Claim Objections

Claims 7 and 12 are objected to because in the last clause, the phrase 'an ordinary graph' is used. This phrase is not defined in the instant specification. Examiner believes that this term is intended to mean 'ordinary, linear' graph in the sense that an ordinary graph has both axes in linear mode. Examiner is interpreting this term in this manner, which is consistent with the intrinsic record, as required by *Phillips v. AWH*. If applicant has another definition in mind, applicant is strongly encouraged to amend the claims to clarify this point. For purposes of actions beyond the close of prosecution (e.g. appeal) the term will be interpreted in that manner and examiner will provide grounds for that in the Answer.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 7 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bar.

Claims 7 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over ORCAD/PSpice in view of Spiegel – backed by Lab and Tufte (Edward R. Tufte. “The Visual Display of Quantitative Information.”)

[Claim 12 is a computer program implementing the method of claim 7; therefore any rejections valid on claim 7 are equally valid on claim 12 without further comment. Applicant has not contested this point over the last several Office Actions, so this grouping and single group rejection will stand for purposes of appeal]

As to claims 7 and 12,

A logarithmic graph plotting apparatus comprising: (Preamble is not given patentable weight, since it only recites a summary of the claim and/or an intended use, and the process steps and/or apparatus components are capable of standing on their own; see *Rowe v. Dror*, 112 F.3d 473, 42 USPQ2d 1550 (Fed. Cir. 1997), *Pitney Bowes, Inc. v.*

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Hewlett-Packard Co., 182 F.3d 1298, 1305, 51 USPQ2d 1161, 1165 (Fed. Cir. 1999), and the like.)

-A range setting unit for setting an x-coordinate range for a graph ranging from an arbitrary x-minimum value to an arbitrary x-maximum value, and a y-coordinate range for the graph ranging from an arbitrary y-minimum value to an arbitrary y-maximum value; (Spiegel page 3, section d, states that "Probe provides ... a range of choices to manipulate the graphics, such as range of the axes, labels, etc." and the program *prima facie* graphs two-dimensionally. Further, OrCAD shows page 5, Log X axis and Log Y axis buttons, proving x and y coordinate ranges, thus directly proving that such data is graphed, if it can be manipulated by adjusting the layout of the axes.)(Lab page 5 shows the 'Axis Settings' dialog box used in probe where this dialog box clearly allows the user to choose the settings for each of the x- and y-axes where for each axis the range and scale can be defined, with the range being arbitrarily selectable)

-A logarithmic axis setting unit for selecting whether to set at least one of x- and y-axes as corresponding logarithmic x- and y-axes, whereby any axis that is not set to be logarithmic is set to be a linear scale; (OrCAD page 5 and page 8 clearly shows that the toolbars in Probe have buttons 'Log X Axis' and 'Log Y Axis' that allow the user to toggle the axes from linear to log and back and forth)(Note brief discussion in Response to Arguments above – PSpice only has two types of axes – linear and log – therefore if an axis is not one, it will be the other)

-A logarithmic scale marking unit for marking x- and/or y-axes with logarithmic scales in the x- and y-coordinate ranges set by the range setting unit; and (OrCAD page 5,

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description of Probe toolbar buttons, “Log X axis” and “Log Y axis” as options to switch the views between linear and log views, obviously such capability inherently requires the marking units when such graphs are generated so that they can be displayed)

-An x-logarithmic scale number determining unit for determining a number of logarithmic scales for the x-axis, based on a number obtained by evaluating a difference between a logarithm of the x-minimum value and a logarithm of the x-maximum value and converting the calculated difference to an integer; (See Lab page 5, where the ‘Axis Settings’ dialog box of Probe is shown, wherein the user can select a desired arbitrary range; obviously, the PSpice system would only compute the logarithmic axis over the desired data range. Similarly, it would be inherent (and examiner takes Official Notice) that PSpice does in fact work this way – that the data range chosen by the user is determined and the axes are appropriately generated – for example, if the user defined range was 500Hz to 50kHz, PSpice puts one axis per order of magnitude, and operates in base 10 – see for example page 9 of ‘Brief Spice Tutorial’ from University of Utah, Fall 2002 (reference predates applicant’s priority filing date), where each mark on the axis shown represents one order of magnitude. Clearly, this shows that PSpice functions in the manner specified, and it does generate an integer number of axes where that integer is the range of the data as set forth in applicant’s claim)

-An x-axis scale-plotting control unit for controlling plotting of logarithmic scales for the x-coordinate range such that the determined number of logarithmic scales for the x-coordinate range are plotted when the x-axis is selected to be set as the logarithmic x-axis, and such that no visible scales of any kind are plotted for the x-coordinate range

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when the x-axis is set to be linear and the y-axis is selected to be set as the logarithmic y-axis; (Clearly PSpice/ORCAD, Spiegel, and Lab all teach that PSpice software Probe generates such graphs, an example of which is also shown in page 9 of 'Brief Spice Tutorial' as above.)(Lab page 5 shows the 'Axis Settings' dialog box used in probe where this dialog box clearly allows the user to choose the settings for each of the x- and y-axes where for each axis the range and scale can be defined, with the range being arbitrarily selectable)(When the Log X-axis button in PSpice page 5 or the X-axis settings tab in Page 5 of Lab is set to 'Log' the determined number of scales are displayed on the screen as set forth there. If the log setting is not enabled or the button is not pressed, the graph is linear, which clearly corresponds to the 'no scales' requirement recited therein.)(Tufte pages 171-172, pages 150-152, 126-128, particularly pages 93-97)

-A y-logarithmic scale number determining unit for determining a number of logarithmic scales for the y-axis, based on a number obtained by evaluating a difference between a logarithm of the y-minimum value and a logarithm of the y-maximum value and converting the calculated difference to an integer; (same reasoning as set forth above for the x-axis – each axis has its own 'Axis Settings' dialog box)

-A y-axis scale-plotting control unit for controlling plotting of logarithmic scales for the x-coordinate range such that the determined number of logarithmic scales for the y-coordinate range are plotted when the x-axis is selected to be set as the logarithmic y-axis, and such that no visible scales of any kind are plotted for the x-coordinate range when the y-axis is set to be linear and the x-axis is selected to be set as the logarithmic

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x-axis; (Clearly PSpice/ORCAD, Spiegel, and Lab all teach that PSpice software Probe generates such graphs, an example of which is also shown in page 9 of 'Brief Spice Tutorial' as above.)(When the Log Y-axis button in PSpice page 5 or the Y-axis settings tab in Page 5 of Lab is set to 'Log' the determined number of scales are displayed on the screen as set forth there. If the log setting is not enabled or the button is not pressed, the graph is linear, which clearly corresponds to the 'no scales' requirement recited therein.) (Tufte pages 171-172, pages 150-152, 126-128, particularly pages 93-97 and 40--45)

-A graph plotting control unit for plotting on a display screen a logarithmic graph corresponding to the plotted logarithmic scales corresponding to the selected at least one of the x- and y-axes when the at least one of the x- and y-axes is selected, and for plotting on the display screen an ordinary graph corresponding to the x- and y-axes when neither of the x- and y-axes is selected to be set as the corresponding logarithmic x- and y-axes. (Clearly PSpice/ORCAD, Spiegel, and Lab all teach that PSpice software Probe generates such graphs, an example of which is also shown in page 9 of 'Brief Spice Tutorial' as above. Also see previously cited reference Leach page 5 where example graphs with such vertical lines are shown) (When the Log X-axis button in PSpice page 5 or the X-axis settings tab in Page 5 of Lab is set to 'Log' the determined number of scales are displayed on the screen as set forth there. If the log setting is not enabled or the button is not pressed, the graph is linear, which clearly corresponds to the 'no scales' requirement recited therein.)

The combination references, all referring to the same product (PSpice Probe program), teach all of the limitations of the instant claim except the limitation of not showing any visible scale marks on the linear axis when the graph is in linear-log mode (that is, one axis is in a linear display, and one axis is in log display mode). Reference Spiegel clearly discloses that the PSpice Probe software graphs data and can be used to manipulate how the data is shown and can set the data ranges shown. The quick reference guide from the software's manufacturer – reference OrCAD - clearly shows that the software can toggle back and forth between linear and log views. Reference Lab is only included to provide a concrete example of certain crucial details of the operation of PSpice, namely the Axis Settings dialog box. It would have been obvious to combine OrCAD and Spiegel, as Spiegel is a tutorial on how to use the software described in OrCAD, and Lab is also another tutorial on how to use the PSpice software, and applicant has conceded these points already by not challenging additional presented evidence and previous takings of Official Notice. Further, the evidence, as stated, above, clearly establishes that PSpice will show no scales (e.g. linear mode only) when the log axis functionality is not present. However, PSpice might still show some scale markings, as noted above.

The Tufte reference teaches that data clutter should be minimized; that is, the total proportion of a graphic's ink (total ink used to print it) devoted to the non-redundant display of data-information should be maximized. This is achieved in several ways, particularly with respect to time-series graphs (where it is clearly established that showing the time axis is unnecessary and results in unnecessarily cluttered and

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inelegant graphs – pages 40–44, particularly the graph on page 43, where there is no label at all on the y-axis because it is self-explanatory. Further, for normalized data – if the normalization range is to between 0 and 1 – then the presence of a scale on the other axis is not required. For the case of time series graphs per se – whether those are in bar graph format – pages 126–128 – the commonly used templates in fact do not **show** a labeled x-axis with any kind of visible scale, and in the case of EEG graphs, the time component is understood to be there and is not shown. Finally, see the graph on page 132 as an embodiment of a perfect graph without the additional axes.

The Tufte reference further discusses that avoiding distortion in a graph is very important. Pages 53–77 are devoted to graphical integrity, such that a graph conveys what it really means. The entire point is that distortion should be avoided. In the case of a log-linear graph, it would be very easy to mistake unlabeled variations on the x-axis for a log-log graph and thusly greatly misunderstand the data. In the case of a log-log or linear/linear graph, it is clear from the data sets that graphs should be supplied, since the units are commensurate – that is, linear units match and map to linear units. However, in a log-linear graph a log block maps to a linear unit, and it is extremely confusing to have such gradations on a plot, particularly when it is a time series or derived bar graph. Clearly, Tufte suggests that leaving axes unlabeled is desirable when possible to avoid visual clutter. However, in a time series graph or linear bar graph, the point is to make the user aware of a trend with respect to the log axis. The plotting of an underlying linear series would only add to the confusion. As such, it is best to simply leave the graph as uncluttered as possible so that the trends are visible

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and not bother with unnecessary axis labeling so that there is no confusion of mapping log points to linear units.

PSpice probe clearly delivers time-series data and can generate bar graphs, so clearly the design rules for displaying information taught by Tufte apply here. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the PSpice reference to avoid displaying any visible scale on the opposing axis when only one axis is selected for log display because it reduces visual clutter, increases the amount of data ink, and otherwise makes the graph easier to understand and the trends it shows easier to comprehend, as discussed above.

As to claim 8,

The logarithmic graph plotting apparatus according to claim 7, wherein the range setting unit comprises a unit for displaying on the display screen a range setting image in which the x-minimum value and the x-maximum value of the x-coordinate range and the y-minimum value and the y-maximum value of the y-coordinate range are indicated; (Axis Setting dialog box shown in Lab page 5)(firstly, Spiegel teaches that the Probe program can be used to set the range, and OrCAD specifically shows in the toolbar button descriptions that there are tabs in the Axis Settings dialog box, which is identical to the "range setting picture" specified by applicant (e.g. applicant's Figs. 2A and 2B), where range and the log/linear options for both axes can be selected, as specified in the captions next to the "Log X Axis" and "Log Y Axis" buttons)(obviously, both windows for

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the axes could be open at the same time, or else such modification would have been trivially obvious)

-Wherein the logarithmic axis setting unit comprises a displaying unit for displaying on the display screen a logarithmic axis setting image including items for selecting whether to set each of the x- and y-axes as the corresponding logarithmic x- and y-axes; and (Axis Settings dialog box clearly shows this option; the toolbars in Probe also have this option as discussed in the rejection to claim 7 above, and on pages 5 and 9 of the OrCAD quick reference guide, etc.)

-Wherein the range setting image and the logarithmic axis setting image are displayed on the display screen in parallel. (Range Settings dialog box, both options are shown on the screen at the same time)(This fact has been stipulated via Official Notice and applicant has not disputed it; further see the 'Brief Spice Tutorial', page 9, where in the bottom right portion of that image the start and end frequencies (e.g. max and min values) for one of the axes is shown).

Motivation and combination are taken from the rejection to the parent claim and are herein incorporated in their entirety by reference.

As to claim 9,

The logarithmic graph plotting apparatus according to claim 7, further comprising a unit for indicating error when at least one of the x- and y-axes is selected to be set as the corresponding x- and/or y-logarithmic axes in the logarithmic axis setting unit, and when a value in the at least one of the x- and y-coordinate ranges corresponding to the selected at least one of the x- and y-axes is not positive in the range setting image.

The references do not expressly teach these limitations. However, it would have been obvious that since a log function by definition does not have a definite value for zero (the function evaluates to infinity or is a division by zero) and is undefined for negative numbers, any attempt to use a log axis plot for a data set with negative numbers would cause an error. It is a fundamental of the software engineering and programming arts that when a program experiences an error, it should display an error dialog box explaining, as much as possible, what the error was and what caused it, for diagnostic purposes and such that the user can avoid making similar errors again. Therefore, it would have been obvious to show an error box stating that the functionality of a log axis was not valid over a data set with negative numbers, or at the very least to merely show an error message, as shown by applicant (Fig. 2X).

Any attempt to perform log functionality on a data set with a value of zero or negative numbers in the x data set / range results in the program giving an error message and not proceeding any further. Motivation / combination is taken from the parent claim and incorporated herein by reference without further comment. Applicant has accepted the above stipulation as fact by not contesting it in the last Office Action.

As to claim 11,

The logarithmic graph plotting apparatus according to claim 7, wherein the items in the logarithmic axis setting image for selecting whether to set the x- and/or y-axes as the corresponding logarithmic axes comprise check boxes.

Reference Spiegel does not explicitly teach this limitation. However, given that reference OrCAD clearly shows that toggle buttons that only had two states – like the

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recited check boxes – that have the recited functionality (switching between linear and log axes), it would have been obvious to modify the software to use check boxes instead of toggle buttons, as each have the same functionality and Spice uses check boxes in the X-axis and Y-axis tabs under the Axis Settings dialog box (see Lab page 5, and examiner takes official notice, and check boxes are shown there). Again, it is a fundamental of the software art that GUI input widgets (e.g. toggle buttons, check boxes, etc.) can be switched out with each other, particularly in Java GUI-based WYSIWIG (what-you-see-is-what-you-get) IDE (integrated development environments) and web-layout tools that have been available since before 2000, and the Java language also allows the specification of Radio-button and Checkbox primitives (“CORE Web programming”, see attached reference. The noted Java 1.1 package was released in 2000). It would have been obvious to combine OrCAD and Spiegel, as Spiegel is a tutorial on how to use the software described in OrCAD, and examiner takes Official Notice to back up these positions, and it would have been obvious to so modify the program of OrCAD to use check boxes, as it is a fundamental of the art (see attached CORE java reference as one example of this).

Claim 10 is rejected under 35 U.S.C. 103(a) as unpatentable over OrCAD/PSpice, Spiegel, Lab, and Tufte as applied to claim 7 above and further in view of Tutorial (‘Brief Spice Tutorial’ for Fall 2002 from University of Utah).

The references do not expressly teach this limitation, but Tutorial shows it on page 9 (that is, the straight edges extending from each of the logarithmic scales. Also

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see previously cited reference Leach page 5 where example graphs with such vertical lines are shown. It is well known in the art and trivial to do so in graphic displays of data.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eric Woods whose telephone number is 571-272-7775. The examiner can normally be reached on M-F 7:30-5:00.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ulka Chauhan can be reached on 571-272-7782. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Eric Woods

June 22, 2006


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SUPERVISORY PATENT EXAMINER